

SEQUENCE LISTING

<110> Harrington, John J.  
Sherf, Bruce  
Rundlett, Stephen

<120> Compositions and Methods for Non-targeted Activation of Endogenous Genes

<130> 1522.0030004/MAC/BJD

<140> To be assigned

<141> 1999-03-26

<150> To be assigned

<151> 1999-03-08

<150> 09/253,022

<151> 1999-02-19

<150> 09/159,643

<151> 1998-09-24

<150> 08/941,223

<151> 1997-09-26

<160> 17

<170> PatentIn Ver. 2.0

<210> 1

<211> 39

<212> DNA

<213> Homo sapiens

<400> 1

tccttcgaag cttgtcatgg ttggttcgct aaactgcat

<210> 2  
<211> 40  
<212> DNA  
<213> Homo sapiens

<400> 2  
aaacttaaga tcgattaatc attcttctca tataacttcaa

40

<210> 3  
<211> 28  
<212> DNA  
<213> Homo sapiens

<400> 3  
atccaccatg gctacaggtg agtactcg

28

<210> 4  
<211> 36  
<212> DNA  
<213> Homo sapiens

<400> 4  
gatccgagta ctcacctgta gccatggtgg atttaa

36

<210> 5  
<211> 33  
<212> DNA  
<213> Homo sapiens

<400> 5  
ggcgagatct agcgctatat gcgttgatgc aat

33

<210> 6  
<211> 51  
<212> DNA  
<213> Homo sapiens

<400> 6

ggccagatct gctaccttaa gagagccgaa acaagcgctc atgagcccga a 51

<210> 7

<211> 6084

<212> DNA

<213> Homo sapiens

<400> 7

agatcttcaa tattggccat tagccatatt attcattggt tatatacgat aaatcaat 60  
tggctattgg ccattgcata cggtgtatct atatcataat atgtacattt atattggctc 120  
atgtccaata tgaccgcccattg attattgact agttattaat agtaatcaat 180  
tacggggtca ttagttcata gccccatataat ggagttccgc gttacataac ttacggtaaa 240  
tggcccgctt ggctgaccgc ccaacgaccc cccggccattt acgtcaataa tgacgtatgt 300  
tcccatagta acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta 360  
aactgcccac ttggcagttac atcaagtgtt tcatatgcca agtccgcccc ctattgacgt 420  
caatgacggtaatggcccg cctggcatta tgcccaatgtac atgacccatgg 480  
tacttggcag tacatctacg tattagtcat cgcttattacc atggtgatgc gggtttggca 540  
gtacaccaat gggcgtggat agcgggttga ctcacgggaa tttccaagtc tccacccat 600  
tgacgtcaat gggagtttgc tttggcacca aaatcaacgg gactttccaa aatgtcgtaa 660  
caactgcgtat cggccgcccc gttgacgcaatggcgttgc ggcgtgtacg gtgggagggtc 720  
tatataagca gagctcgaaaatggcgtt agtgaaccgt cagatcacta gaagctttat tgccgttagtt 780  
tatcacaatggcgtt aaattgtctaa cgcagtcgt gcttctgaca caacagtctc gaacttaagc 840  
tgcagtgact ctcttaatggcgtt actccaccatggcgtt ttcacttca gttcccttttgc cttccaccatgg 900  
tctcacttca gttcccttttgc catgaagagc tcagaatcaa aagaggaaac caacccctaa 960  
gatgagcttttccatgttccatggatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1020  
aggtgcgttc tccaaagaga ttacgaatgc cttggaaacc tgggtgcct tgggtcagga 1080  
catcaacttgcgtt gacattcccta gttttcaatggatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1140  
aaaaacttca gacaagaaaa agattgcaca attcagaaaa gagaaagaga ctttcaagga 1200  
aaaagataca tataagctat ttttttgcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1260  
tgatcaggat atctacaagg tatcaatata tgatcaggatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1320  
aatatttgcgtt ttgaagattc aagagagggtt cttccatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1380  
caacacaacc ctgcacccgttgc aggtatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1440  
agatggaaaa catctaaaac tttctcagatggcgtt gttcccttttgc attttcaatggcgtt tttcttccaa 1500  
gagtgcaaaa ttcaagtgca cagcaggaa caaagtcagc aaggaatcca gtgtcgagcc 1560  
tgtcagctgtt ccagagaaag ggatccaggtt gttcccttttgc attttcaatggcgtt tttcttccaa 1620  
tctcttaagg tagcaaggtt acaagacagg tttaaggaga ccaatagaaaa ctgggtttgttgc 1680

cgagacagag aagactcttgcgttctgat aggacacctat tggtcttacg cggccgcgaa 1740  
ttccaagctt gagtattcta tcgtgtcacc taaaataactt ggcgtaatca tggtcataatc 1800  
tgtttcgtgt gtgaaattgt tatccgctca caattccaca caacatacga gccggaagca 1860  
taaagtgtaa agcctgggt gcctaattgag tgagctaact cacattaatt gcgttgcgcg 1920  
atgcttccat tttgtgagggt ttaatgcttc gagaagacat gataagatac attgatgagt 1980  
ttggacaaac cacaacaaga atgcagtgaa aaaaatgctt tatttgtgaa atttgtgatg 2040  
ctattgcttt atttgtaacc attataagct gcaataaaaca agttaacaac aacaattgca 2100  
ttcattttat gtttcagggtt cagggggaga tgtgggaggt tttttaaagc aagtaaaacc 2160  
tctacaaatg tggtaaaatc cgataaggat cgattccgga gcctgaatgg cgaatggacg 2220  
cgccctgttag cggcgcatta agcgcggcgg gtgtgggtgt tacgcgcacg tgaccgctac 2280  
acttgccagc gcccctagcgc ccgctcctt cgccttcttc cttcccttc tcgcccacgtt 2340  
cgccggcttt ccccgtaag ctctaaatcg gggctccct ttagggttcc gattttagtgc 2400  
tttacggcac ctcgaccccc aaaaacttga ttagggtgat ggttcacgta gtgggccatc 2460  
gccctgatag acggttttc gcccttgac gttggagtcc acgttcttta atagtggact 2520  
cttggcccaa actggAACAA cactcaaccc tatctcggtc tattctttt atttataagg 2580  
gattttgccg atttcggcct attggtaaa aaatgagctg atttaacaaa aatttaacgc 2640  
gaattttaac aaaatattaa cgcttacaat ttgcctgtg taccttctga ggcggaaaga 2700  
accagctgtg gaatgtgtgt cagtttaggt gtggaaagtc cccaggctcc ccagcaggca 2760  
gaagtatgca aagcatgcat ctcaattagt cagcaaccag gtgtggaaag tccccaggct 2820  
ccccaggcagg cagaagtatg caaagcatgc atctcaatta gtcagcaacc atagtccgc 2880  
ccctaactcc gcccattcccg cccctaactc cgcccagttc cgcccattct ccgccccatg 2940  
gctgactaat ttttttatt tatgcagagg ccgaggccgc ctggcctct gagctattcc 3000  
agaagtagtg aggaggctt tttggaggcc taggcttttgc caaaaagctt gattcttctg 3060  
acacaacagt ctcgaactta aggctagagc caccatgatt gaacaagatg gattgcacgc 3120  
agttctccg gcccattcccg tggagaggct attcggctat gactggcac aacagacaat 3180  
cggtgctct gatgccgcgc tggtccggct gtcagcgcag gggcgcccggttcttttgc 3240  
caagaccgac ctgtccgggtg ccctgaatga actgcaggac gaggcagcgc ggctatcg 3300  
gctggccacg acggccgttc cttgcgcagc tggctcgac gttgtcactg aagcggaaag 3360  
ggactggctg ctattggcg aagtgcgggg gcaggatctc ctgtcatctc accttgctcc 3420  
tggccgagaaa gtatccatca tggctgatgc aatgcggcgg ctgcatacgc ttgatccggc 3480  
tacctgcccc ttcgaccacc aagcgaaaca tcgcatacgag cgagcacgtt ctcggatgg 3540  
agccggctt gtcgatcagg atgatctgga cgaagagcat cagggctcg cgccagccga 3600  
actgttcgcgc aggctcaagg cgccatgcgc cgcgcgttc gatctcgatg tgaccctgg 3660  
cgatgcctgc ttgcccataa tcatgggttga aaatggccgc ttttctggat tcatcgactg 3720  
tggccggctg ggtgtggcgg accgctatca ggacatagcg ttggctaccc gtgatattgc 3780  
tgaagagctt ggccggcaat gggctgaccg cttccctcgat ctttacggta tcgcccacgtt 3840  
cgattcgacg cgcacatcgcc tctatcgcc tcttgacgag ttcttctgag cgggactctg 3900

gggttcgaaa tgaccgacca agcgacgccc aacctgccat cacgatggcc gcaataaaat 3960  
atctttattt tcattacatc tgtgtgttgg ttttttgtt gaagatccgc gtatggtgca 4020  
ctctcagtac aatctgctct gatgccgcat agttaagcca gccccgacac cccccaacac 4080  
ccgctgacgc gccctgacgg gcttgcgtgc tcccgcatc cgcttacaga caagctgtga 4140  
ccgtctccgg gagctgcatg tgtcagaggt tttcacccgtc atcaccgaaa cgcgcgagac 4200  
gaaagggcct cgtgatacgc ctattttat aggttaatgt catgataata atggtttctt 4260  
agacgtcagg tggcactttt cggggaaatg tgcgcggaac ccctatttgt ttattttct 4320  
aaatacattc aaatatgtat ccgctcatga gacaataacc ctgataaaatg cttcaataat 4380  
attgaaaaag gaagagtatg agtattcaac atttccgtgt cgcccttatt cccttttttg 4440  
ccgcatttttgc cttccctgtt tttgctcacc cagaaacgct ggtgaaagta aaagatgctg 4500  
aagatcagtt ggggcacga gtgggttaca tcgaactgga tctcaacagc ggtaagatcc 4560  
ttgagagttt tcgccccgaa gaacgttttc caatgatgag cactttaaa gttctgctat 4620  
gtggcgcggt attatccgtt attgacgccc ggcaagagca actcggtcgc cgcatacact 4680  
attctcagaa tgacttggtt gagtactcac cagtcacaga aaagcatctt acggatggca 4740  
tgacagtaag agaattatgc agtgctgcca taaccatgag tgataaacact gcccggcaact 4800  
tacttctgac aacgatcgga ggaccgaagg agctaaccgc tttttgcac aacatggggg 4860  
atcatgtAAC tcgccttgat cggtggaaac cggagctgaa tgaagccata ccaaacgacg 4920  
agcgtgacac cacgatgcct gtagcaatgg caacaacggt gcgc当地ttaactggcg 4980  
aactacttac tctagcttcc cggcaacaat taatagactg gatggaggcg gataaagttg 5040  
caggaccact tctgcgctcg gcccttcgg ctggctgggtt tattgtgtat aaatctggag 5100  
ccgggtgagcg tgggtctcgc ggtatcattt cagcactggg gccagatggg aagccctccc 5160  
gtatcgttagt tatctacacg acggggagtc aggcaactat ggtgaacga aatagacaga 5220  
tcgctgagat aggtgcctca ctgattaagc attggtaact gtcagaccaa gtttactcat 5280  
atatacttta gattgatttta aaacttcatt tttaatttta aaggatctag gtgaagatcc 5340  
tttttgataa tctcatgacc aaaatccctt aacgtgagtt ttcgttccac tgagcgtcag 5400  
accccgtaga aaagatcaa ggatcttctt gagatccctt tttctgcgc gtaatctgct 5460  
gcttgcaaac aaaaaaaccg ccgctaccag cgggtgggtt tttgccggat caagagctac 5520  
caactctttt tccgaaggta actggcttca gcagagcgca gataccaaat actgtccttc 5580  
tagttagcc gtagttaggc caccactca agaactctgt agcaccgcct acatacctcg 5640  
ctctgctaat cctgttacca gtggctgctg ccagtggcga taagtctgtt cttaccgggt 5700  
tggactcaag acgatagttt ccggataagg cgcagcggc acggctgaacg ggggggttcgt 5760  
gcacacagcc cagcttggag cgaacgaccc acaccgaact gagataaccta cagcgtgagc 5820  
tatgagaaag cgccacgctt cccgaaggaa gaaaggcgga caggtatccg gtaagcggca 5880  
gggtcgaaac aggagagcgc acgagggagc ttccaggggg aaacgcctgg tatctttata 5940  
gtcctgtcgg gttcgccac ctctgactt gtcgtcgatt tttgtatgc tcgtcagggg 6000  
ggcggagcct atggaaaaac gccagcaacg cggcctttt acggttccctg gcctttgct 6060  
ggcctttgc tcacatggct cgac 6084

<210> 8  
<211> 6085  
<212> DNA  
<213> Homo sapiens

<400> 8  
agatcttcaa tattggccat tagccatatt attcattggt tatatacgat aaatcaatat 60  
tggctattgg ccattgcata cggtgtatct atatcataat atgtacattt atattggctc 120  
atgtccaata tgaccgcccattg attattgact agttataat agtaatcaat 180  
tacggggtca tttagttcata gcccataat ggagttccgc gttacataac ttacggtaaa 240  
tggccgcct ggctgaccgc ccaacgaccc cccgcattt acgtcaataa tgacgtatgt 300  
tccccataga acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta 360  
aactgcccac ttggcagttac atcaagtgtt tcatatgcca agtccgcccc ctattgacgt 420  
caatgacggt aaatggcccg cctggcatta tgcccagttac atgaccttac gggactttcc 480  
tacttggcag tacatctacg tattagtcat cgctattacc atggtgatgc gggtttggca 540  
gtacaccaat gggcgtggat agcggtttga ctcacggga tttccaagtc tccacccat 600  
tgacgtcaat gggagtttgc ttggcacca aaatcaacgg gactttccaa aatgtcgtaa 660  
caactgcgtat cggccgcctt gttgacgcaa atgggcggta ggcgtgtacg gtgggaggc 720  
tatataagca gagctcgaaa agtgaaccgt cagatcacta gaagctttat tgccgttagtt 780  
tatcacagtt aaattgctaa cgcagtcgt gcttctgaca caacagtctc gaacttaagc 840  
tgcagtgact ctcttaatta actccaccag tctcacttca gttcccttttgc cctccaccag 900  
tctcacttca gttcccttttgc catgaagagc tcagaatcaa aagagggaaac caacccctaa 960  
gatgagcttt ccatgttaat ttgttagccag cttcccttctg atttcaatg tttcttccaa 1020  
aggtgcgtc tccaaagaga ttacgaatgc cttggaaacc tgggtgcct tgggtcagga 1080  
catcaacttg gacattccta gtttcaat gagtgatgtt attgacgata taaaatggga 1140  
aaaaacttca gacaagaaaa agattgcaca attcagaaaa gagaaagaga ctttcaagga 1200  
aaaagataca tataagctat taaaaatgg aactctgaaa attaagcattc tgaagaccga 1260  
tgatcaggat atctacaagg tatcaatata tgataaaaaa ggaaaaaatg tggtggaaaa 1320  
aatatttgc ttgaagattc aagagagggt ctcaaaaacca aagatctcct ggacttgcgtat 1380  
caacacaacc ctgacccgtg aggtaatgaa tggaaactgac cccgaattaa acctgtatca 1440  
agatggaaa catctaaaac tttctcagag ggtcatcaca cacaagtggc ccaccagcct 1500  
gagtgcggaaa ttcaagtgc cagcaggaa caaagtgcgc aaggaatcca gtgtcgagcc 1560  
tgtcagctgt ccagagaaag ggatcccagg tgagttagggc ccgatccttc tagagtcgag 1620  
ctctcttaag gtagcaaggt tacaagacag gtttaaggag accaatacgaa actgggcttg 1680  
tcgagacaga gaagactctt gcgtttctga taggcaccta ttggtcttac gcggccgcga 1740  
attccaagct tgagtattct atcgtgtcac ctaaataact tggcgtaatc atggtcatat 1800

ctgtttcctg tgtgaaattt ttatccgctc acaattccac acaacatacg agccggaagc 1860  
ataaaagtgtt aaggctgggg tgcctaatacg gtgagctaac tcacattaat tgcgttgccc 1920  
gatgcttcca ttttgtgagg gttaatgcct cgagaagaca tgataagata cattgtatgag 1980  
tttggacaaa ccacaacaag aatgcagtga aaaaaatgct ttatgttgc aatttgcgtat 2040  
gctattgctt tatttgcac cattataagc tgcaataaac aagttacaa caacaattgc 2100  
attcatttttta tgtttcaggt tcagggggag atgtggagg tttttaaag caagtaaaac 2160  
ctctacaaat gtggtaaaat ccgataagga tcgattccgg agcctgaatg gcgaatggac 2220  
gcgcctgtt gccccgcatt aagcgccgcg ggtgtgggtt ttacgcgcac gtgaccgcta 2280  
cacttgcacag cgcccttagcg cccgctcctt tcgctttctt cccttcctt ctcgccacgt 2340  
tcgcccgtt tccccgtcaa gctctaaatc gggggctccc tttaggggtt cgatttatgt 2400  
cttacggca cctcgacccc aaaaaacttgc attagggtga tggttcacgt agtggccat 2460  
cgccctgata gacggttttt cgcccttgcgatc cacgttctt aatagtggac 2520  
tcttgccttca aacttggaaaca acactcaacc ctatctcggt ctattttttt gatttataag 2580  
ggattttgcgat tattggtaa aaaatgagct gatttacaa aaatttacg 2640  
cgaattttaa caaaatatta acgcttacaa ttgcctgtt gtacctctg aggccggaaag 2700  
aaccagctgtt ggaatgtgtt tcagtttaggg tggaaaagt ccccaggctc cccagcaggc 2760  
agaagtatgc aaagcatgca tctcaattttt tcagcaacca ggtgtggaaa gtccccaggc 2820  
tccccagcag gcagaagtat gcaaaggcatg catctcaattt agtcagcaac catatgtcccg 2880  
cccctaactc cgcccatccc gcccctaact ccgcccaggcc ttccgccttccat 2940  
ggctgactaa ttttttttat ttatgcagag gcccaggccg cctcggcctc tgagctattt 3000  
cagaagtagt gaggaggctt tttggaggc ctaggctttt gcaaaaagct tgattttct 3060  
gacacaacag tctcgaactt aaggcttagag ccaccatgtat tgaacaagat ggattgcacg 3120  
cagggttctcc ggccgcttgg gtggagaggc tattcggcta tgactggca caacagacaa 3180  
tcggctgctc tgatgccccc gtgttccggc tgcgcgcac ggggcgcggc gtttttttgc 3240  
tcaagaccga cctgtccggc gcccctaactt aacttgcagga cgaggcaggc cggctatcgt 3300  
ggctggccac gacggcggtt cttgcgcag ctgtgcgtt cgttgcactt gaagccggaa 3360  
gggactggct gctattggc gaagtgcgg ggcaggatct cctgtcatct cacccgttgc 3420  
ctggccgagaa agtattccatc atggctgtatc caatgcggcg gctgcatacg cttgtatccgg 3480  
ctacctgccc attcgaccac caagcgaaac atcgcatcga gcgagcacgt actcggatgg 3540  
aagccggctt tgcgtatcag gatgtatcgg acgaagagca tcagggctc ggcgcaggccg 3600  
aactgttcgc caggctcaag ggcgcgcac ccgcacggcga ggcgcgcac gtcgcacccatg 3660  
gcgatgcctg cttgcgaat atcatggtgg aaaatggccg cttttcttgcgat ttcatcgact 3720  
gtggccggctt ggggtggcg gaccgctatc aggacatagc gttggctacc cgtatatttgc 3780  
ctgaagagct tggccggcga tggctgcacc gcttcctcgat gctttacggc atcgccgcctc 3840  
ccgattcgcgatc ggcgcacccatc ttctatcgcc ttcttgcacgc gttcttgcac ggcggactct 3900  
ggggttcgaa atgaccgacc aagcgacgcc caacctgcca tcacgttgcg cgcataaaaa 3960  
tatctttattt ttcattacat ctgtgttttttgc gtttttttttgc tgaagatccg cgtatggcgc 4020

actctcagta caatctgctc tgatgccga tagttaagcc agccccgaca cccgccaaca 4080  
cccgctgacg cgccctgacg ggcttgtctg ctcccggcat ccgcttacag acaagctgtg 4140  
accgtctccg ggagctgcat gtgtcagagg ttttcaccgt catcaccgaa acgcgcgaga 4200  
cgaaagggcc tcgtgatacg cctatttta taggtaatg tcatgataat aatggttct 4260  
tagacgtcag gtggacttt tcggggaaat gtgcgcggaa cccctatttgc ttattttc 4320  
taaatacatt caaatatgta tccgctcatg agacaataac cctgataaaat gcttcaataa 4380  
tattgaaaaa ggaagagtat gagtattcaa cattccgtg tcgccttat tcccttttt 4440  
gccccattt gccttcctgt ttttgcac ccagaaacgc tggtaaaagt aaaagatgct 4500  
gaagatcagt tgggtgcacg agtgggttac atcgaactgg atctcaacag cggtaagatc 4560  
cttgagagtt ttccggccga agaacgtttt ccaatgatga gcactttaa agttctgcta 4620  
tgtggcgcgg tattatcccg tattgacgcc gggcaagagc aactcggtcg cccatacac 4680  
tattctcaga atgacttggt tgagtactca ccagtcacag aaaagcatct tacggatggc 4740  
atgacagtaa gagaattatg cagtgtgcc ataaccatga gtgataaac ac tgcggccaac 4800  
ttacttctga caacgatcg aggaccgaag gagctaaccg ctttttgca caacatgggg 4860  
gatcatgtaa ctgccttga tcgttggaa ccggagctga atgaagccat accaaacgac 4920  
gagcgtgaca ccacgatgcc tgttagcaatg gcaacaacgt tgcgcaaact attaactggc 4980  
gaactactta ctctagcttc ccggcaacaa ttaatagact ggttggaggc ggataaaagtt 5040  
gcaggaccac ttctgcgctc ggccttccg gctggctgggt ttattgctga taaatctgga 5100  
gcccgtgagc gtgggtctcg cggtatcatt gcagcactgg ggccagatgg taagccctcc 5160  
cgtatctgtttt ttatctacac gacggggagt caggcaacta tggatgaacg aaatagacag 5220  
atcgctgaga taggtgcctc actgattaag cattggtaac tgtcagacca agtttactca 5280  
tatatactttt agattgattt aaaacttcat ttttaattta aaaggatcta ggtgaagatc 5340  
ctttttgata atctcatgac caaaatccct taacgtgagt tttcggttcca ctgagcgtca 5400  
gaccccgtag aaaagatcaa aggttctt ttagatcctt ttttttgcg cgtaatctgc 5460  
tgcttgcaaa caaaaaaaacc accgctacca gcggtggttt gtttgcggaa tcaagagcta 5520  
ccaactctttt ttccgaaggt aactggcttc agcagagcgc agataccaaa tactgtcctt 5580  
ctagttagc cgtatcttcc accaccatcc aagaactctg tagcaccggc tacataccctc 5640  
gctctgctaa tcctgttacc agtggctgct gccagtggcg ataagtcgtg tcttaccggg 5700  
ttggactcaa gacgatagtt accggataag ggcgcagcggt cgggctgaac ggggggttcg 5760  
tgcacacagc ccagcttggaa gcaacgacc tacaccgaac tgagataacct acagcgtgag 5820  
ctatgagaaa gcgccacgct tcccgaaggg agaaaggcgg acaggtatcc ggtaagcggc 5880  
agggtcgaa caggagagcg cacgagggag cttccagggg gaaacgcctg gtatctttat 5940  
agtccctgtcg ggtttcgcca cctctgactt gagcgtcgat ttttgcgtatc ctcgtcagg 6000  
gggcggagcc tatggaaaaa cgccagcaac gcggccttt tacggttcct ggccctttgc 6060  
tggccttttgc ctcacatggc tcgac 6085

<211> 6086

<212> DNA

<213> Homo sapiens

<400> 9

agatcttcaa tattggccat tagccatatt attcatttgt tatatacgat aaatcaatat 60  
tggctattgg ccattgcata cgttgtatct atatcataat atgtacattt atattggctc 120  
atgtccaata tgaccgccc gttggcattt attattgact agttattaat agtaatcaat 180  
tacggggtca ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa 240  
tggcccgct ggctgaccgc ccaacgaccc ccccccattt acgtcaataa tgacgtatgt 300  
tccccatagta acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta 360  
aactgcccac ttggcagtac atcaagtgtt tcatatgcca agtccgcccc ctattgacgt 420  
caatgacggt aaatggcccg cctggcatta tgcccagtac atgaccttac gggactttcc 480  
tacttggcag tacatctacg tattagtcat cgcttattacc atggtgatgc gggtttggca 540  
gtacaccaat gggcgtggat agcggtttga ctacacgggaa tttccaagtc tccaccccat 600  
tgacgtcaat gggagtttgc tttggcacca aaatcaacgg gactttccaa aatgtcgtaa 660  
caactgcgat cgcccccccc gttgacgcaa atggcggta ggcgtgtacg gtgggaggc 720  
tatataagca gagctcggtt agtgaaccgt cagatcacta gaagctttat tgccgttagtt 780  
tacacagtt aaattgctaa cgcaagtca gcttctgaca caacagtctc gaacttaagc 840  
tgcagtgact ctcttaatta actccaccag tctcacttca gttccttttgc cctccaccag 900  
tctcacttca gttccttttgc catgaagagc tcagaatcaa aagagggaaac caacccctaa 960  
gatgagcttt ccatgttaat ttgttagccag cttcccttctg atttcaatg tttcttccaa 1020  
aggtgcagtc tccaaagaga ttacgaatgc cttggaaacc tgggggtgcct tgggtcgagga 1080  
catcaacttg gacattccta gtttcaaat gagtgatgat attgacgata taaaatggga 1140  
aaaaacttca gacaagaaaa agattgcaca attcagaaaa gagaaagaga ctttcaagga 1200  
aaaagataca tataagctat taaaaatgg aactctgaaa attaagcatc tgaagaccga 1260  
tgatcaggat atctacaagg tatcaatata tgataaaaa ggaaaaatg tggtggaaaa 1320  
aatatttgat ttgaagattc aagagagggc ctcaaaacca aagatctcct ggacttgc 1380  
caacacaacc ctgacctgtg aggtaatgaa tggaaactgac cccgaattaa acctgtatca 1440  
agatggaaaa catctaaaac tttctcagag ggtcatcaca cacaagtggc ccaccagc 1500  
gagtgcaaaa ttcaagtgca cagcaggaa caaagtgc aaggaatcca gtgtcgagcc 1560  
tgtcagctgt ccagagaaag ggatccacag gtgagtaggg cccgatcctt ctagagtcga 1620  
gctctcttaa ggttagcaagg ttacaagaca ggttaagga gaccaataga aactggcctt 1680  
gtcgagacag agaagactct tgcgtttctg ataggcacctt attggctta cgcggccgc 1740  
aattccaagc ttgagttttc tatcgtgtca cctaaataac ttggcgtaat catggtcata 1800  
tctgtttcct gtgtgaaatt gttatccgc cacaattcca cacaacatac gagccggaag 1860  
cataaaagtgt aaagcctggg gtgcctaattt agtgcgttgcg 1920

cgatgcttcc attttgtag ggttaatgct tcgagaagac atgataagat acattgatga 1980  
gtttggacaa accacaacaa gaatgcagtg aaaaaaatgc tttatttgta aaatttgta 2040  
tgctattgct ttattgtaa ccattataag ctgcaataaa caagttaca acaacaattg 2100  
cattcattt atgtttcagg ttcaggggaa gatgtggag gtttttaaa gcaagtaaaa 2160  
cctctacaaa tgtggtaaaa tccgataagg atcgattccg gagcctgaat ggcaatgga 2220  
cgccccctgt agcggcgcat taagcgccgc ggggtgtggt gttacgcgca cgtgaccgct 2280  
acacttgcca gcgccttagc gccgcctcct ttcgccttct tcccttcctt tctcgccacg 2340  
ttcgccggct ttcccggtca agctctaaat cgggggctcc ctttagggtt ccgatttagt 2400  
gtttacggc acctcgaccc caaaaactt gattagggtg atggttcacg tagtggcca 2460  
tcgcccgtat agacggttt tcgcccattt acgttggagt ccacgttctt taatagtgga 2520  
ctcttggtcc aaactggaac aacactcaac cctatctcg tctattcttt tgatttataa 2580  
gggattttgc cgatttcggc ctattggta aaaaatgago tgatttaaca aaaatttaac 2640  
gcaattttta acaaaatatt aacgcttaca atttcgcctg tgtaccttct gaggcggaaa 2700  
gaaccagctg tggaatgtgt gtcagttagg gtgtggaaag tccccaggct ccccagcagg 2760  
cagaagtatg caaagcatgc atctcaatta gtcaagcaacc aggtgtggaa agtccccagg 2820  
ctccccagca ggcagaagta tgcaaagcat gcacatcaat tagtcagcaa ccatagtccc 2880  
gccctaact ccgcctatcc cgcccttaac tccgcctcgt tccgccttattt ctccgccttca 2940  
tggctgacta attttttta ttatgcaga ggccgaggcc gcctcgccct ctgagctatt 3000  
ccagaagtag tgaggaggct ttttggagg cctaggctt tgaaaaagc ttgatttttc 3060  
tgacacaaca gtctcgaaact taaggctaga gccaccatga ttgaacaaga tggattgcac 3120  
gcaggttctc cggccgcttg ggtggagagg ctattcgct atgactggc acaacagaca 3180  
atcggtcgct ctgatgccgc cgtgttccgg ctgtcagcgc agggcgccc ggttttttt 3240  
gtcaagaccg acctgtccgg tgcctgaat gaactgcagg acgaggcagc gcggctatcg 3300  
tggctggcca cgacggcggt tccttgcga gctgtgcgt acgttgcac tgaagcggga 3360  
agggactggc tgctattttttt cgaagtggcg gggcaggatc tcctgtcattc tcaccttgct 3420  
cctgcccaga aagtatccat catggctgat gcaatgcggc ggctgcatac gcttgatccg 3480  
gctacctgcc cattcgacca ccaagcgaaa catcgcatcg agcgagcagc tactcgatg 3540  
gaagccggc ttgtcgatca ggatgatctg gacgaagagc atcaggggct cgcccgagcc 3600  
gaactgttcg ccaggctcaa ggcgcgcattt cccgacggcg aggatotcgt cgtgaccat 3660  
ggcgatgcct gcttggaa tatcatggt gaaaaatggcc gctttctgg attcatcgac 3720  
tgtggccggc tgggtgtggc ggaccgctat caggacatag cggtggctac ccgtgatatt 3780  
gctgaagagc ttggccggca atgggctgac cgcttcctcg tgcttacgg tatcgccgct 3840  
cccgattcgc agcgcatcgc cttctatcgc cttcttgcgt agttctctg agcgggactc 3900  
tggggttcga aatgaccgac caagcgacgc ccaacctgcc atcacgatgg cccgaataaaa 3960  
atatctttat ttccattaca tctgtgtgtt ggtttttgtt gtgaagatcc gcgtatggtg 4020  
caactctcagt acaatctgct ctgatgccgc atagttagc cagccccgac acccgccaac 4080  
acccgctgac gcgcctgac gggcttgcgt gctcccgga tccgcttaca gacaagctgt 4140

gaccgtctcc gggagctgca tgtgtcagag gtttcacccg tcatcaccga aacgcgcgag 4200  
acgaaaggc ctcgtatac gcctatttt ataggttaat gtcataataa taatggttc 4260  
ttagacgtca ggtggcactt ttccggaaa tgtgcgcga accccctattt gtttatttt 4320  
ctaaatacat tcaaataatgt atccgctcat gagacaataa ccctgataaa tgcttcaata 4380  
atattgaaaa aggaagagta tgagtattca acattccgt gtcgcctta ttccctttt 4440  
tgcggcattt tgccttcctg ttttgctca cccagaaaacg ctggtgaaag taaaagatgc 4500  
tgaagatcag ttgggtgcac gagtggtta catcgaaactg gatctcaaca gcggtaagat 4560  
ccttgagagt ttgcggcccg aagaacgtt tccaatgatg agcactttt aagttctgct 4620  
atgtggcgcg gtattatccc gtattgacgc cggcaagag caactcggtc gccgcataca 4680  
ctattctcag aatgacttgg ttgagtaactc accagtcaca gaaaagcatac ttacggatgg 4740  
catgacagta agagaattat gcagtgcgc cataaccatg agtgataaca ctgcggccaa 4800  
cttacttctg acaacgatcg gaggaccgaa ggagctaacc gctttttgc acaacatggg 4860  
ggatcatgtt actcgccctt atcggtggg accggagctg aatgaagcca taccaaacga 4920  
cgagcgtgac accacgatgc ctgttagcaat ggcaacaacg ttgcgc当地 tattaactgg 4980  
cgaactactt actctagctt cccggcaaca attaatagac tggatggagg cggataaaagt 5040  
tgcaggacca cttctgcgtc cggcccttcc ggctggctgg tttattgctg ataaatctgg 5100  
agccggtgag cgtgggtctc gcggtatcat tgcagcactg gggccagatg gtaagccctc 5160  
ccgtatcgta gttatctaca cgacggggag tcaggcaact atggatgaac gaaatagaca 5220  
gatcgctgag ataggtgcct cactgattaa gcattggtaa ctgtcagacc aagtttactc 5280  
atataactt tagattgatt taaaacttca ttttaattt aaaaggatct aggtgaagat 5340  
cctttttagt aatctcatga cccaaatccc ttaacgtgag tttcgttcc actgagcggtc 5400  
agaccccgta gaaaagatca aaggatctt ttgagatcct tttttctgc gcgtaatctg 5460  
ctgcttgcaa aaaaaaaaaac caccgctacc agcggtggtt tggttgc当地 atcaagagct 5520  
accaactctt tttccgaagg taactggctt cagcagagcg cagataccaa atactgtcct 5580  
tcttagtgtag ccgtatgttag gccaccactt caagaactct gtgc当地 accgc当地 ctacataacct 5640  
cgctctgcta atccctgttac cagtggtgc tgccagtgcc gataagtcgt gtcttaccgg 5700  
gttggactca agacgatagt taccggataa ggcgcagcgg tcgggctgaa cgggggggttc 5760  
gtgcacacag cccagcttgg agcgaacgc ctacaccgaa ctgagatacc tacagcgtga 5820  
gctatgagaa agcgccacgc ttcccgaaagg gagaaggcgc gacaggtatc cggttaagcgg 5880  
cagggtcgga acaggagagc gcacgaggga gcttccagg ggaaacgcct ggtatctt 5940  
tagtcctgtc gggttcgcc acctctgact tgagcgtcga ttttgcgtat gctcgtcagg 6000  
ggggcggagc ctatggaaaa acgccagcaa cgccgc当地 ttacgggtcc tggcctttt 6060  
ctggccctttt gtcacatgg ctgcac 6086

<210> 10

<211> 38

<212> DNA

<213> Artificial sequence

<220>

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 10

ttttttttt ttcgtcagcg gccgcacnn nntttatt

38

<210> 11

<211> 25

<212> DNA

<213> Artificial sequence

<220>

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 11

cagatcacta gaagctttat tgccgg

25

<210> 12

<211> 20

<212> DNA

<213> Artificial sequence

<220>

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 12

tttcgtcag cggccgcatc

20

<210> 13

<211> 45

<212> DNA

<213> Artificial sequence

<220>

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 13

actcataggc catagaggcc tatacacagtt aaatttgctaa cgca

45

<210> 14

<211> 43

<212> DNA

<213> Artificial sequence

<221> OTHER

<222> 1

<223> 5' cytosine at position #1 is biotinylated

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 14

ctcgtttagt gcggccgctc agatcactga attctgacga cct

43

<210> 15

<211> 41

<212> DNA

<213> Artificial sequence

<221> OTHER

<222> 1

<223> 5' cytosine at position #1 is biotinylated

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 15

ctcgtttagt ggcgccgcaag atcactgaat tctgacgacc t

41

<210> 16

<211> 22

<212> DNA

<213> Artificial sequence

<221> OTHER

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 16

gacctactga ttaacggcca ta

22

<210> 17

<211> 20

<212> DNA

<213> Artificial sequence

<221> OTHER

<222> 1

<223> 3' thymidine at position #20 is biotinylated

<223> Description of artificial sequence: synthetic oligonucleotide

<400> 17

tcgtcagaat tcagtgtatct

20